

Final Report

ANALYSIS OF INAPPROPRIATE UTILIZATION AND  
LACK OF ACCESS FOR THE PURPOSE OF DETERMINING  
THE MEDICARE VOLUME PERFORMANCE STANDARDS

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# TABLE OF CONTENTS

	<u>Page</u>
ABSTRACT.....	iv
1. INTRODUCTION.....	1
2. INAPPROPRIATE UTILIZATION.....	3
2.1 Conceptual Framework.....	3
Defining Appropriateness .....	3
Determining Appropriateness .....	4
Measuring Inappropriateness .....	7
2.2 Findings from the Literature.....	9
Evidence on the Extent of Inappropriate Care.....	9
Evidence on Geographic Variation in Utilization Rates.....	12
Evidence on the Effectiveness of Feedback and Practice Guidelines.....	18
3. LACK OF ACCESS TO NECESSARY CARE.....	20
3.1 Conceptual Framework.....	20
Definition of Access.....	20
Indicators of Access.....	21
Measurement of the Existence and Extent of Access Limitations.....	22
3.2 Recent Statistics on Selected Access Measures for Medicare Beneficiaries.....	23
Potential Access.....	24
Realized Access.....	28
3.3 Likely Effects of Physician Payment Reform on Beneficiary Access to Care.....	28
4. IMPLICATIONS.....	30
4.1 Quantifying the Extent of Inappropriate Utilization and Lack of Access.....	30

4.2	Use of the MVPS as a Mechanism to Correct Problems with Inappropriate Utilization and Access.....	33
4.3	Conclusions: Steps for the Future.....	36
5.	REFERENCES.....	42

## LIST OF TABLES

Table 1:	Findings of Appropriateness Studies.....	10
Table 2:	Findings of Small Area Geographic Variation.....	14
Table 3:	Findings of Large Area Geographic Variation.....	15
Table 4:	Decomposition of Total Liability into Medicare Program Liability and Beneficiary Liability.....	25

## ABSTRACT

The purpose of this report is to discuss the incorporation of evidence on the inappropriate use of health care and lack of access to necessary services into the Secretary's annual recommendations for the Medicare Volume Performance Standards (MVPSs). Various conceptual approaches to measuring the extent of inappropriate utilization and access limitations are presented, along with available evidence on access and inappropriate care. None of these approaches is completely satisfactory; their methodological shortcomings combined with limitations in data make it infeasible to measure inappropriate care or lack of access on a consistent, reliable, and aggregate basis. More important, however, is the conclusion that the MVPS, in and of itself, is not an adequate mechanism for addressing problems with inappropriate utilization and access. That is, even if it were possible to derive reliable estimates of the extent of inappropriate utilization and lack of access, incorporation of this evidence into the MVPS would not be worthwhile without concurrent implementation of other, much more direct approaches. In light of these conceptual and practical impediments, the report emphasizes the importance of monitoring utilization and other indicators of access that may point to potential problems in these areas. Illustrative approaches are presented to assist in the development of this monitoring program.

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## 1. INTRODUCTION

In the Omnibus Budget Reconciliation Act of 1989 (OBRA89), Congress passed legislation calling for the reform of Medicare's physician payment methodology. The current system of "usual, customary, or reasonable" (UCR) fees will be replaced with a national resource-based relative value fee schedule. In addition to correcting perceived inequities in the current UCR system, one major goal of the physician payment reform package was to provide the Federal government with more control over aggregate expenditures for Medicare physician services. The establishment of Medicare Volume Performance Standards (MVPSSs) is designed to help achieve this goal. Under MVPS policy, annual updates to the conversion factor, which translates relative values into fee-schedule payment amounts, will be determined in part by a comparison of the actual rate of growth in physician expenditures with a predetermined standard growth rate, called the MVPS.

Medicare Volume Performance Standards are to be determined as follows. For each fiscal year, the Secretary of HHS is required to recommend to Congress by April 15 a performance standard for the rate of growth in Medicare expenditures for physician services. Currently, three MVPSSs are set: one for all physician services, one for surgical services, and one for non-surgical services. The OBRA89 legislation also mandates HHS to examine the feasibility of group-specific performance standards. After the Secretary has made his recommendation, the Physician Payment Review Commission (PPRC) has until May 15 to review it and to advance its own recommendation to Congress. If Congress fails to act on these recommendations, OBRA89 specifies a default formula to be used to determine the MVPSSs.

In making the April 15 recommendations, the Secretary is to consider the impact of a number of factors that can influence the rate of growth in expenditures for physician services. These

include inflation, changes in the number and age distribution of Medicare beneficiaries, changes in technology, evidence of inappropriate utilization of physician services, evidence of lack of access to necessary services, and other factors. In addition, the Secretary is required to monitor and report annually on changes in the utilization of and access to Medicare-covered services within geographic, population, and service-related categories.

The purpose of this report is to consider the issues of inappropriate utilization and lack of access to necessary care within the context of the Secretary's MVPS recommendation. A companion report dealing with the issue of technological change has also been prepared.

In Section 2 of this report, we discuss issues related to the inappropriate utilization of services. This discussion encompasses the presentation of a conceptual framework for how to quantify the extent of inappropriate utilization, and evidence from past utilization studies, including geographic variation and appropriateness research. Access to care is discussed in Section 3, including consideration of how to define access and measure the extent of access limitations, evidence on Medicare beneficiaries' access to physician services, and the likely impact of physician payment reform on access. Finally, in Section 4, we discuss: (1) the feasibility of quantifying these factors, and (2) the meaningfulness of incorporating evidence on their extent into the MVPS. Options for monitoring utilization and access to care are also presented.

## 2. INAPPROPRIATE UTILIZATION

This section presents a conceptual framework for assessing the existence and extent of inappropriate utilization. The framework encompasses the following steps: (1) conceptually defining appropriateness, (2) determining clinical indications of appropriate care, and (3) measuring the extent to which medical procedures or services are rendered inappropriately. Following the conceptual discussion, we present findings from a literature review of utilization studies, including appropriateness research and research on geographic variation in procedure use rates.

### 2.1 Conceptual Framework

#### Defining Appropriateness

For the purposes of this analysis, inappropriate care refers to the provision of a suboptimal type and level of health care services for a given patient condition. Brook et al. (1989) from the Rand Corporation describe three conceptual approaches to defining appropriateness: benefit-risk, benefit-cost, and implicit. In the studies conducted by Rand researchers, appropriateness was defined in benefit-risk terms: "the expected health benefit (increased life expectancy, relief of pain, reduction in anxiety, or improved functional capacity) exceeded the expected negative consequences (mortality, morbidity, anxiety of anticipating the procedure, pain produced by the procedure and time lost from work) by a sufficiently wide margin that the procedure was worth doing" (Park et al., 1986). The researchers explicitly decided to exclude any consideration of resource costs when determining appropriateness.

A benefit-cost approach to defining appropriateness adds consideration of the resource costs associated with providing the



procedure, without regard to who pays, to the benefit-risk approach (Brook, 1989). Using this definition, a procedure or medical service would be deemed appropriate only if the net benefit to the patient exceeds the cost of providing the procedure. None of the articles surveyed for this report used a benefit-cost approach.

Brook et al. describe the implicit approach as one where standards for appropriateness might be used, but no clear, explicit definitions are delineated. In general, this approach relies on physician judgement of appropriateness and is typically used in hospital utilization review. Studies by Greenspan and Roos, described later, used this approach.

Wennberg's research on prostatectomy outcomes led him to a conclusion that adds what many feel is an important dimension of appropriateness--patient preference. Wennberg (1990(a)) has stated the following:

"Perhaps the most important conclusion so far is that for individual patients with benign prostatic hypertrophy, rational choices among treatments depend on attitudes about risks and benefits--on how patients view their predicaments....Indeed, no objective data derived from physical examination, clinical history, or careful quantification of symptoms can accurately predict the preferences of individual patients for surgery or watchful waiting."

#### Determining Appropriateness

Two approaches to determining the appropriateness of medical procedures and treatments are the use of consensus panels, employed by the Rand researchers and others, and outcomes research, advocated by Wennberg and now supported by the Agency for Health Care Policy and Research (AHCPR) through at least eleven grants to researchers around the country. Although the outcomes approach can include a number of different scientific

methods, it is distinct from the use of consensus panels because it is predicated on the need to gather new evidence on what works. The use of consensus panels, on the other hand, implies that through the literature and the experience of several renowned experts, we already have adequate information to draw conclusions about the appropriate use of services and procedures. Both approaches are described below.

- o Consensus Panel Approach

Generally speaking, consensus panels bring together a number of experts to review scientific evidence on certain treatments or procedures and to generate recommendations on appropriate or effective medical care. The National Institutes of Health (NIH) established their Consensus Development Program in 1977 to improve channels of communication from the research community to practicing physicians and the general public. The NIH panels congregate biomedical research scientists, practicing physicians, consumers and others. Their primary objective is to reach general agreement on the safety and effectiveness of medical devices, surgical procedures or drugs (DHHS, 1991).

Researchers at Rand began their appropriateness studies by convening three consensus panels. Each panel had to rate the appropriateness of a very large number of indications for specific medical or surgical procedures. Unlike the information generated by NIH consensus panels, which is geared toward use by practicing physicians, the ratings generated by the Rand physician panels were specifically detailed enough to be used to measure the extent of inappropriate care through chart review. The Rand approach to consensus panels is discussed further in Section 2.2.

## o Outcomes Research Approach

Recently, outcomes research has become a prevailing approach to determining the effectiveness of medical procedures. The outcomes approach recognizes that as technologies diffuse into the health care system, they are used by much more diverse patient populations and in different health care settings. Outcomes research, therefore, uses large administrative data bases as the starting point for developing information on patient populations and health outcomes. Because administrative data alone are insufficient to determine appropriateness, they are supplemented with more detailed clinical information on patient characteristics, services, and outcomes.

Wennberg has led the recent outcomes research initiative with his study of prostatectomy outcomes (Wennberg, et al., 1988). The research involved four steps:

- 1) evaluating published evidence and current opinion;
- 2) using large claims data bases from Medicare and the Manitoba Health Insurance Program to:
  - a) obtain estimates of the probabilities of survival and complications up to eight years after the operation,
  - b) look for differences in the efficacy of alternative treatments, and
  - c) evaluate the importance of hospital-specific differences in death rates;
- 3) conducting interviews with patients and their physicians to assess symptoms, functional status, and the strength of patients' feelings about their symptoms before and after surgery as well as to gather information on the incidence of complications that were not recorded in the claims data; and
- 4) building a decision model to provide a rational synthesis of the information derived from the literature, the claims data, and the interviews.

The Patient Outcomes Research Team (PORT) Projects funded by AHCPR generally include these same research components. However, not all of the studies will involve decision analysis, and many will include the dissemination of findings and recommendations as well as the evaluation of the effect of the recommendations on clinical practice (AHCPR, 1990).

Both of these approaches to determining medical care appropriateness may be limited due to inadequate data; although several agencies, including HCFA, are spearheading new data collection activities. For example, it is expected that Peer Review Organizations (PROs), under contract to HCFA, will begin abstracting clinical data from the hospital medical record for Medicare patients. Clinical data obtained as part of the Uniform Clinical Data Set (UCDS) will include information about the patient's condition at admission, results of laboratory and other tests, operative episodes, non-invasive interventions, and discharge status. Initial plans are to use the UCDS to make PRO review more uniform and less influenced by individual judgement. Eventually, these data could be matched to other Medicare data files to enable detailed longitudinal analyses of patient outcomes.

### Measuring Appropriateness

Actually measuring the extent of inappropriate utilization is a third critical step if such evidence is to be incorporated into the MVPS. Information from either consensus panels or outcomes research could be used for this type of analysis. Recent initiatives in outcomes research, however, include as a next step the development of practice guidelines. While outcomes research and guideline development are critical to addressing the inappropriate care problem, in and of themselves, they do not provide information on the extent of inappropriate utilization, which is needed for setting the MVPS.

The two potential approaches to measuring the extent of inappropriate utilization include medical chart review and the use of epidemiological data to establish expected "appropriate" utilization rates. Researchers at Rand used claims data and in-depth chart review to determine whether or not patients who received a certain medical procedure had the appropriate indications for it. Medical chart review could also be used to select patients or cases based on the presence of a particular medical condition. This type of review would focus on whether appropriate care was rendered and would take into account inappropriate under-utilization.

The second potential measurement approach involves the use of epidemiological data on the incidence and prevalence of certain conditions, combined with determinations of the appropriate medical treatment for those conditions (perhaps from outcomes research or a consensus panel). This information would establish expected "appropriate" use rates for the procedure. The expected use rate would then be compared to the actual use rate. If the expected rate were below the actual rate, one might conclude that the procedure is being provided inappropriately. (On the other hand, if the expected rate were above the actual rate, one might conclude that access to the procedure is a problem.)

The application of this second approach is limited due to data constraints. The appropriateness of a procedure often depends on the stage of a disease and factors other than primary diagnosis. For some conditions, existing data may have sufficient detail; for example, in conjunction with determinations of appropriate care, data from the National Cancer Institute's Surveillance, Epidemiology, and End Results (SEER) program might provide information sufficient for establishing an appropriate procedure rate (e.g., prevalence of a stage 2 cancer which warrants a particular treatment). However, most

epidemiological data on disease rates are not detailed enough to determine what the appropriate level of care should be across the population.

## 2.2 Findings from the Literature

This section describes various studies of health care utilization, including appropriateness research and research on geographic variation. It also presents some evidence on the effects of feedback and practice guidelines on physician practice patterns.

### Evidence on the Extent of Inappropriate Care

The Rand researchers chose six procedures that are frequently performed, use substantial resources, and show large geographic variability in use rates: coronary angiography, carotid endarterectomy, upper gastrointestinal tract endoscopy, coronary artery bypass surgery, cholecystectomy and colonoscopy. Indications for each procedure were prepared by staff (compiled primarily from an exhaustive review of the medical literature) and then presented to the consensus panels for review. The number of initial indications for each procedure ranged from 192 for cholecystectomy to 1,685 for endoscopy. Panelists assigned initial ratings to the indications based on a scale of one to nine: one to three being inappropriate, four to six being equivocal, and seven to nine being appropriate. After completing the initial ratings by mail, the panelists met and spent about one day discussing and re-rating the indications for each procedure. For final ratings, the panelists agreed on a little over half of the indications, and they disagreed on up to 30 percent of them (Park et al., 1986).

The researchers at Rand applied the lists of rated indications developed by these physician panels to Medicare Part

B claims data. For coronary angiography, carotid endarterectomy and upper gastrointestinal endoscopy, they first chose geographic areas of high, average and low use. Then, from a complete file of Medicare Part B claims, they randomly selected Medicare beneficiaries in these areas who received one of the procedures in 1981. Since claims data alone were inadequate for assessing appropriateness, the researchers reviewed medical charts. To do so, they needed the participation of the physicians and hospitals that had rendered the care to the selected patients. Ninety percent (819) of the physicians, and 99 percent (227) of the hospitals agreed to participate (Kosecoff, 1987).

To study the appropriateness of performing coronary artery bypass surgery, researchers reviewed 386 cases from the years 1979, 1980, and 1982 from three randomly selected hospitals in a western state. The data sample had already been collected as part of a larger study, and was not confined to the Medicare population. The study involved abstracting data from the medical records and using the Rand-developed indications list to determine appropriateness.

As shown in Table 1, the researchers found a high proportion of inappropriate use of the procedures, ranging from 14 to 32 percent for all four procedures studied. In none of the cases, however, was there any correlation between the degree of inappropriateness and the level of utilization. In other words, there was as much inappropriate use of procedures in areas with low use rates as there was in areas with high use rates. Thus, the Rand studies conclude that differences in the appropriate use of procedures cannot explain the geographic variation in their use (Chassin, 1987).

Table 1: Findings of Appropriateness Studies

Researcher	Procedure	Ap.	Eq.	In.
Brook et al. (1986)	coronary angiography	74%	9%	17%
	carotid endarterectomy	35	32	32
	upper GI endoscopy	72	11	17
	cor. artery bypass surgery	56	30	14
Greenspan (1988)	pacemaker implantation	44	36	20

Notes: Ap.= appropriate; Eq.= equivocal; In.= inappropriate

While the Rand appropriateness studies are considered seminal work, there are a few caveats to note. First, the study applied medical practice information available through 1986 to 1981 data, and in the case of CABG, to 1979 through 1982 data. Because of the changing nature of medical care, it is not clear that standards applied retrospectively will yield meaningful results. Second, the consensus panel method is not an empirical one. Rather, it relies heavily on the judgments or opinions of a small group of specialists who may not have the clinical insight or background to justify their ratings.

While the Rand researchers have conducted the most rigorous studies of the extent of appropriate procedure use and its relationship to geographic variation, there are at least a couple of other studies worth mentioning.

Roos et al. (1977) tried to explain the geographic variation in tonsillectomy and adenoidectomy rates by studying morbidity, standards of selection for the operation (otherwise known as practice guidelines), and surgical resources. Although they found a "low level of conformity to recommended standards," the degree of nonconformity did not correlate with the geographic variation in surgical rates (Roos, 1977).



To confirm or repudiate the allegations of unwarranted pacemaker implantation, Greenspan and his research team reviewed the indications for all new pacemaker implantations, for Medicare beneficiaries only, between January 1 and June 30, 1983 at 30 hospitals in Philadelphia County (Greenspan, 1988). The research team evaluated 382 implants by indepth chart review, which included an evaluation of the history and physical examination, progress notes, all records on electrocardiograms, ambulatory monitoring and laboratory data.

The data were reviewed by a medical panel consisting of four board-certified cardiologists, a cardiothoracic surgeon, two registered nurses and a PRO representative. Cases were classified in categories of definitely indicating implantation, possibly indicating implantation (inadequate data) or not indicating implantation. Results were forwarded to the hospitals for their analysis. If the hospital disputed the panel's classification, more data were requested and reviewed by the panel. As presented in Table 1, the study found that 20 percent of pacemaker implantations were inappropriate and another 36 percent were equivocal.

#### Evidence on Geographic Variation in Utilization Rates

Studies of geographic variation in health care utilization have indicated that there is a substantial amount of medical uncertainty surrounding the use of many medical and surgical procedures. Earlier studies concentrated on geographic variation among small areas, defined as counties, hospital service areas, or health planning areas. More recent studies have assessed cross-national and large area variation, including entire states and large areas within states. The findings, although not wholly consistent, indicate that geographic variation is greatest for procedures about which there is less consensus regarding their

appropriate use. According to Wennberg, this lack of consensus results in the development of local or geographically-confined practice patterns, which may vary substantially from one area to the next (Wennberg, 1984).

- o Small Geographic Area Studies

In general, researchers have conducted small geographic area variation analysis using three steps: first, identifying contiguous geographic areas; second, obtaining demographic data from the US decennial census to adjust for the age and sex distribution of residents within each area; and third, counting the number of procedures performed on residents of each area during a particular year (Barnes et al., 1985). Data sources for counting the number of procedures have included Medicare Part B claims data or various state-operated data systems, e.g., the Cooperative Health Statistics Center of Vermont, the Maine Data Service, Rhode Island Health Services Research, and the Michigan Inpatient Data Base (Wennberg, 1984).

Studies of small geographic area variation have documented a substantial amount of variation for certain procedures. For example, Wennberg's studies have found the following: in one year, the likelihood that women who had reached 70 years of age had undergone a hysterectomy was 20 percent in one Maine hospital market while it was 70 percent in another; the chance that male Iowa residents had a prostatectomy by the time they were 85 years old ranged from 15 to 60 percent depending where they resided; and the probability that Vermont children would have a tonsillectomy ranged from 8 percent to nearly 60 percent in different hospital market areas (Wennberg and Gittelsohn, 1982). Other studies have corroborated Wennberg's results; hysterectomies, prostatectomies, and tonsillectomies are a few of the known high-variation procedures. Examples of low-variation procedures found by Wennberg and others include surgical repair

of inguinal hernias and hospitalizations for hip fractures (Wennberg, 1984). Evidence from these and other studies are presented in Table 2. It should be noted that highest/lowest ratios must be viewed with caution. Ratios are dependent on the number of observations; as the number of areas increases, so does the probability of obtaining larger and larger ratios.

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**Table 2: Findings of Small Area Geographic Variation**

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Researcher	Procedure	Highest/Lowest Rate Ratio
Lewis (1969)	appendectomy	3.8
	inguinal hernia	2.3
Wennberg and Gittelsohn (1982)	hysterectomy	3.5
	prostatectomy	4.0
	tonsillectomy	7.5
Roos (1982)	surgery rates	2.7
	cataract removal	4.2
	hysterectomy	5.0
Vayda et al (1984)	cesarean section	>4.0
	colectomy	>9.0
Barnes (1985)	pacemaker insertion	>2.0
	intervert.disk exc.	>2.0
	tonsillectomy	>2.0

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Other small area variation studies have focused on hospital admissions. McMahon and colleagues' study (1989) of hospital admissions in Michigan demonstrated that certain diagnostic groups showed a consistent degree of variation, either high or low, across a variety of geographic areas, including urban, suburban and rural locations. He found hospital admission rates for the following procedures to show the least variation: inguinal and femoral hernia operations, hip repair except joint

replacement, acute myocardial infarctions, appendicitis, major small and large bowel operations.

- o International Comparisons

An international study of small geographic area variation looked at the incidence of seven common surgical procedures in Norway, Great Britain, and New England (McPherson et al., 1982). The study compared the rates of these procedures among seven hospital service areas in Norway, 21 districts in Great Britain, and 18 of the most populated service areas in Vermont, Maine, and Rhode Island. The study found that although surgery rates were higher in New England, the degree of variability among the service areas was no greater than that found among the service areas or districts of Norway and Great Britain. The study also found that the rank order of variability for most procedures was consistent among the three countries. High-variation procedures again included tonsillectomies, hysterectomies, and prostatectomies, as well as hemorrhoidectomies. Appendectomies, hernia repairs, and cholecystectomies consistently showed less variation from area to area.

- o Large Geographic Area Studies

Chassin, Brook and their colleagues (1986) from Rand were the first researchers to look at the variation of certain procedures across large geographic areas. They developed population-based use rates from 1981 Medicare Part B files to measure the geographic differences in medical and surgical service use by Medicare beneficiaries in 13 large areas in the United States. The researchers studied 123 procedures and found that between sites with the highest and lowest use rates, variation for 67 procedures was at least three to one. These are procedures performed by physicians in almost all medical and surgical specialties and subspecialties, and involve both

inpatient and outpatient settings. Specific examples of large area variation are presented in Table 3.

Table 3: Findings of Large Area Geographic Variation

Researcher	Procedure	Highest/Lowest Rate Ratio	C.V.*
Chassin and Brook (1986)	hip arthroplasty	11.4	.69
	carotid endarterectomy	4.0	.39
	coronary angiography	2.3	.32
	herniorrhaphy	1.4	.10

\* coefficient of variation

o Causes of Variation

In an effort to explain geographic variation in the use of health care services, researchers have studied the relationship of utilization rates to various supply and demand characteristics of the health care market. On the supply side, researchers have found a positive correlation between rates of medical or surgical procedures and the per-capita supply of surgeons, hospital beds, or both (Wennberg and Gittleston, 1973 and 1982; Lewis, 1969; Holahan, 1990). However, a correlation alone cannot establish whether the supply created the demand for services, the demand created supply, or both. At least a couple of studies found that a small number of physicians provided disproportionately high numbers of certain procedures, accounting for most of the additional cases in high-use areas (Leape, 1989; Roos, 1977). One study also found a positive correlation between the procedure and alternative treatments to the procedure, thereby ruling out physician preference for alternative approaches to the same clinical problem as a determinant of geographic variation (Brook et al., 1986).

Demand-related variables studied include health status or illness rates, health insurance coverage, access to services, and demographic and socioeconomic patient characteristics. Generally, investigators have assumed that the variation is unrelated to disease prevalence because of the extent of variation between adjacent regions with similar populations. Blumberg (1987), however, has shown that there are significant health status differences across geographic areas that cannot be explained by age, and that at least part of the observed differences in hospital use rates may be due to differences in population-based health status. At least one study has looked at the prevalence of a specific condition--respiratory infection--and found no relationship to the procedure--tonsillectomy--warranted by that condition (Roos, 1977). Several other studies found no difference in the health status of individuals, health insurance coverage or access to services among geographic areas with highly variable rates of health care utilization (Wennberg, 1984).

Certain demographic and socioeconomic factors, such as age, income and education, are known to affect patterns of health care utilization, but in several studies have explained only a small fraction of geographic variation (Leape, 1989). Holahan's (1990) recent study found that assignment rates were positively associated with the use or delivery of medical procedures. This implies that financial considerations have an important effect on people's decisions to seek medical care or on physicians' decisions regarding what to provide or recommend. McLaughlin et al. (1989) found that part of the variation in Michigan hospital discharge rates was explained by socioeconomic characteristics. The relative roles played by these factors in explaining geographic variations are still being studied.

At least one study (McPherson, 1982) has shown that geographic variation is not related to the nature of the health

care system because Canada, Great Britain and Norway had the same extent of geographic variation in the use of certain procedures as did the United States. Even within the United States, participation in HMOs, a system known to decrease the use of medical care, has not explained geographic variation in utilization (Leape, 1989).

Studies of large geographic area variation provide evidence that geographic variation cannot be explained by the behavior of a small number of physicians. As noted earlier, Wennberg asserts that the variation results largely from differences in physician practice patterns, which tend to vary most for procedures that lack medical consensus on their appropriate use (Wennberg and Gittleston, 1982).

#### Evidence on the Effectiveness of Feedback and Practice Guidelines

Evidence that feedback to physicians practicing in high-use geographic areas resulted in decreased utilization implies that high utilization may represent some inappropriate care. Wennberg found that hysterectomy rates in Maine and Saskatchewan, Canada, tonsillectomy rates in Vermont and Maine, and lens extraction rates in Norway decreased substantially once feedback was directly provided to physicians on their own procedure rates and those of physicians in neighboring market areas (Wennberg, 1984).

In a recent study (Eagle et al., 1990), feedback coupled with practice guidelines decreased the average length of stay in hospital intensive care units. Another study (Lomas et al., 1989) on guidelines for cesarean sections found that the guidelines alone did not change physician behavior even though they were viewed positively by the physicians who were supposed to use them. The authors concluded that there must be other

incentives or removal of disincentives for the guidelines to effect change in physician practice patterns.



### 3. LACK OF ACCESS TO NECESSARY SERVICES

The concept of lack of access to necessary services requires that "access" as well as "necessary or appropriate services" be defined. Since the issue of defining appropriateness has been presented in Section 2, this section will focus on definitions and indicators of access as well as on alternative conceptual approaches for measuring the extent of any access limitations.

#### 3.1 Conceptual Framework

##### Definition of Access

For the purpose of this analysis, access to health care is defined as the absence of barriers to receiving care. In other words, access exists when an individual is able to freely obtain health care. It is having the capability, rather than the actual use of services, that defines access.

Several researchers have attempted to describe access to care in terms of its various dimensions. Penchansky and Thomas define access as "a general concept that summarizes a set of more specific dimensions describing the fit between the patient and the health care system." The dimensions they identify include availability, accessibility, accommodation, affordability and acceptability (Marcus, 1982). Anderson and colleagues from the University of Chicago define access to care as "those dimensions which describe the potential and actual [or realized] entry of a given population group to the health care delivery system" (Anderson, 1983). Potential and realized access measures are described below.

### Indicators of Access

Potential access measures are the structural features of the health care system and characteristics of the individual that, at least in part, determine whether or not people obtain care. Measures of realized access, on the other hand, reflect the actual use of health care services.

#### o Potential Access Measures

Anderson et al. (1983) categorize the many different measures of potential access into those describing the delivery system and those describing the individual. In terms of the health care system, a commonly used variable for measuring potential access is that of physician supply, which can be measured with physician-to-population ratios and disaggregated by specialty.

Other measures of potential access are those that describe characteristics of the individual. The ability to pay for medical care can be expressed as out-of-pocket costs relative to income and can be measured by a number of variables particularly relevant for the Medicare population. These variables include the presence of Medigap coverage and premium, deductible, and coinsurance amounts. After the annual deductible is met, the beneficiaries' financial liability for Medicare-covered services is determined by the coinsurance percentage, balance-billing limits, physician participation rates, physician assignment rates (measured as either the percent of claims assigned or the percent of total charges assigned) and the reduction rate for unassigned claims, which is the difference between submitted and allowed charges. Some of these measures can also be differentiated by specialty, type of service, place of service, geographic location, and beneficiary characteristics.

Patient linkages to a regular source of care and convenience of services, including waiting time and travel distance, are other measures of potential access.

#### o Realized Access Measures

Realized access can be measured with health care utilization rates, which may reflect either access or inappropriate utilization. Measures relevant for the Medicare population include the proportion of Medicare enrollees who had contact with a provider in a given period of time, the number of services per enrollee, and the number of services provided to the enrollee once a contact was made (the number of services per "user"). These measures can be differentiated by specialty, type of service, place of service, geographic area--region or urban/rural--and subgroup of the beneficiary population. Such differentiation will be important for the consideration of various access-related policy issues relevant to the new physician fee schedule. These are discussed in the implications section of this paper.

#### Measurement of the Existence and Extent of Access Limitations

While both potential and realized access indicators can provide useful information regarding access, utilization data are necessary to estimate the magnitude of any access problem. However, utilization data alone are not sufficient. Utilization rates tell how many people have, in fact, entered the system and how much care was received, but do not reveal whether the utilization was appropriate nor whether those with no utilization had no access or simply had no need for services.

In order to identify and quantify the extent of any access problems, as is necessary if such evidence is to be incorporated

into the MVPS recommendations, it is first necessary to determine what constitutes an appropriate level of medical care. These determinations could, theoretically, be derived via consensus panels or outcomes research, as described in the conceptual framework of Section 2. Either approach could yield information on the appropriate course of treatment for specific medical conditions.

One of the two measurement approaches described in Section 2 could be used to measure the extent of any problems related to health care access. Chart review would fail to consider individuals who never gained access to the health care system. Only a population-based epidemiological approach could potentially account for those who did not receive necessary services. For example, if it were determined that every Medicare beneficiary should receive a flu vaccination every year, then findings of less than 100 percent utilization might indicate a problem.

The case of preventive services is straightforward because the target group is easily identified (e.g., in the case of vaccines, the over 65 population). The appropriateness of most procedures, however, depends on the presence of a number of clinical indications. At present, most epidemiological data are not nearly detailed enough to identify the proportion of the population in need of a specific procedure. Therefore, on a broad basis, this approach is unworkable.

### 3.2 Recent Statistics on Selected Access Measures for Medicare Beneficiaries

Program statistics available from the Medicare/Medicaid Decision Support System provide some empirical evidence on indicators that may reflect beneficiary access to physician services. The figures cited below are somewhat anecdotal and

piecemeal in that they were culled from HCFA statistical publications and published articles, only some of which focused specifically on beneficiary access. Still, considered together, they shed some light on the recent access of Medicare beneficiaries to physician services and, more importantly, provide some guidance as to the types of data HCFA may want to generate and monitor to track possible changes in access following the implementation of physician payment reform.

### Potential Access

#### o Physician Participation Rates

Other things equal, higher rates of physician participation are expected to lower the aggregate out-of-pocket expenses faced by Medicare beneficiaries seeking physician services. The Deficit Reduction Act of 1984 established the Medicare participating physician program to encourage physicians to sign participation agreements. Unpublished data available from HCFA's Office of Research and Demonstrations show that, since the inception of that program in October 1984 through the end of 1990, the proportion of physicians signing participation agreements rose from 29.8 percent to 45.5 percent. The growth in the percent of total covered charges accounted for by these participating physicians was even more dramatic. While 36 percent of all covered charges were generated by participating physicians in 1984 (Burney and Paradise, 1987), this proportion had increased to 67.8 percent by the last quarter of 1990 (DHHS, 1990). These findings indicate a reduction in beneficiary financial liability, and suggest that access may have improved during this time.

Despite this upward trend in participation rates, wide variation has been documented across geographic areas and physician specialties. Such variations indicate inequities in

potential access for Medicare beneficiaries. Using data from the first quarter of 1987, Burney and Paradise (1987) found wide variation in participation rates across states, ranging from only 8.3 percent in Idaho to nearly 86 percent in Massachusetts. Furthermore, the pattern of variation across states had not changed dramatically since the beginning of the participating physician program; states with a low participation rate in 1984 also exhibited low rates in 1987 and conversely for states with high participation rates. Mitchell et al. (1988) examined participation rates at the inception of the participating physician program and found substantial variation also existed by specialty (from 23.9 percent for family practitioners to 46.5 percent for general surgeons). Geographic variation was observed by these authors as well: only 29 percent of rural physicians participated versus 34.6 percent of urban physicians, and by region, participation rates ranged from 28.7 in the South to 41.6 in the Northeast.

#### o Assignment Rates

Data from Burney and Paradise (1987) show that charge assignment rates for physician and other supplier services hovered around 50 percent during the period from 1972 to 1978. Since that time, assignment rates have been on the increase, reaching 70 percent for physicians alone by the second quarter of 1987. Substantial state-to-state variation was observed over the 1984 to 1987 period studied in detail by these authors, a finding that confirmed results from McMillan et al. (1985) for 1982 data. Helbing and Keene (1989) documented large variations in the 1986 assignment rate by type of service, place of service, specialty, and Census division. Burney and Schieber (1985) also found wide variations in the 1983 assignment rates by type of service, place of service, specialty, and for combinations of these variables.

Variations have also been observed for various subgroups of the Medicare population as well. McMillan et al. (1985) found a 30 percentage point difference in 1982 assignment rates for whites (49.3 percent) versus nonwhites (79.9 percent), due in large part to the disproportionate representation of the latter group among Medicaid recipients and the mandatory assignment provision for Medicare beneficiaries also covered by Medicaid. Assignment rates were also found to increase with beneficiary age, again due in part to the higher proportion of older Medicare beneficiaries on Medicaid. The 1983 assignment rates were higher for beneficiaries incurring higher total physician charges in the year (Burney and Schieber, 1985), a finding also reported by Ferry et al. (1980) for 1975 data. McCall and Rice (1983) reported that assignment rates were higher for enrollees in their last year of life and for those in poor health. Together, many of these findings suggest that, at least in the past, physicians may have considered the patient's ability to pay when deciding whether to accept assignment.

In sum, assignment rates vary widely by geographic area, type and place of service, and specialty as well as by characteristics of the beneficiary. These variations have obvious implications for potential access to physician services.

#### o Out-of-Pocket Liability

Table 4 presents some statistics produced by HCFA on historical trends in the decomposition of total liability into the proportion covered by the Medicare program and the proportion for which the beneficiary is financially liable due to coinsurance and balanced-billing. Potential beneficiary liability, which includes payments that may have been covered by supplemental insurance, declined by more than 30 percent over the 1975 to 1987 time period, falling from approximately 39 percent of total liability to less than 30 percent. At the same time,

the Medicare program was responsible for an increasing share of the total liability for physician services, rising from 61 percent of the total in 1975 to just over 70 percent by 1987. In terms of annual growth rates, the total liability per enrollee grew at an average annual rate of 6.8 percent in real terms over the period. Medicare's share of this liability grew at a rate of 8.0 percent per year, while the beneficiary's potential liability grew at only 4.4 percent.

Table 4: Decomposition of Total Liability into Medicare Program Liability and Potential Beneficiary Liability

	Total Liability per Beneficiary	Medicare Program Liability	Potential Beneficiary Liability		
			Total	Copayment	Bal. Bill.
1975	\$227	60.8%	39.2%	29.6%	9.4%
1976	245	61.5	38.5	28.1	10.7
1977	264	61.2	38.8	26.9	10.3
1978	277	63.8	36.2	26.0	10.1
1979	292	64.3	35.7	24.9	10.8
1980	320	64.5	35.5	23.6	11.9
1981	355	66.5	33.5	21.6	11.7
1982	374	64.7	35.3	23.0	12.3
1983	411	65.8	34.2	22.5	11.6
1984	429	66.0	34.0	22.5	11.5
1985	445	67.3	32.7	22.6	10.1
1986	466	67.5	32.5	22.3	10.2
1987	498	70.1	29.9	22.3	7.7
Avg. Annual Growth Rate	6.8%	8.0%	4.4%	5.1%	4.3%

Notes: Dollar figures are expressed in constant 1975 dollars. Percent figures may not add exactly due to rounding. Beneficiary liability is termed potential because some of the costs may have been covered by supplemental insurance.

Source: HCFA, BDMS, Data Compendium on Physicians and Other Non-Institutional Suppliers, Spring 1989.



### Realized Access

Helbing and Keene (1989) report that approximately 70 percent of all Supplemental Medical Insurance (SMI) enrollees received at least one covered physician or supplier service in 1986. This figure represents a steady increase from 48.2 percent of enrollees receiving a covered benefit in 1975 (Edwards and Fisher, 1989). Each user received an average of 34 services in 1986. As would be expected, this varied considerably by type of service (from 1.3 services per user for assistants at surgery to 17 services per user for radiation therapy), place of service (4.4 for the outpatient setting to 38.1 for independent kidney disease treatment centers), and specialty (1.7 for anesthesiologists to 14.2 for internists). Helbing and Keene also documented large variation by Census division (30.1 to 41.4), however, a finding that could indicate differential access if the need for medical care were the same across divisions. Although there are a number of published articles quantifying the utilization of particular procedures, no general information comparable to that presented by Helbing and Keene was available from published sources for other recent years.

### 3.3 Likely Effects of Physician Payment Reform on Beneficiary Access to Care

As Mitchell and Menke (1990) have described, two components of out-of-pocket spending will be affected by physician payment reform: coinsurance and balance-billing amounts. For the average patient, the fee schedule will raise coinsurance amounts, but balance billing limits should more than offset the increase. Even with balance billing limits as high as 125 percent of the fee schedule charge, about one-quarter of all Medicare beneficiaries will experience out-of-pocket payment reductions of 20 percent or more.

Others, however, are expected to experience relatively large increases in their liability (Mitchell and Menke, 1990). Almost 10 percent of Medicare beneficiaries, particularly blacks and rural residents, will have greater out-of-pocket payments for different reasons. In the past, black beneficiaries have used more medical and fewer surgical services than have white beneficiaries. Because fees for medical services will increase and those for surgical services decrease, copayments for these services will also increase and decrease, respectively. Rural physicians of all specialties will be reimbursed at a higher rate than in past years, hence, rural residents will incur higher out-of-pocket costs.

These changes in coinsurance and balance-billing limits may affect both the demand for and the supply of health care services. Beneficiaries may use more, fewer, or a different mix of services than they have in the past. Limits on balance billing are expected to result in lower patient out-of-pocket costs, which could increase patient demand for services. If not offset by balance-billing limits, higher copayments associated with the increase in fees for some services, particularly office visits and cognitive services, could reduce patient demand. Finally, if Medicare fees fall significantly and consistently below those of private payors, physicians may not accept assignment or may stop seeing Medicare patients altogether.

Changes in physician choice of specialty and practice location may also result from the new fee schedule changes in relative payments across different types of services and across geographic areas. These have implications for beneficiary access to care, as well, albeit in the long run.

#### 4. IMPLICATIONS

In Sections 2 and 3, we have discussed alternative conceptual and operational approaches to defining and measuring inappropriate utilization and lack of access. Here, we discuss the implications of these alternatives for quantifying the extent of such problems and for incorporating evidence of their existence into the MVPS.

In order for the incorporation of evidence of inappropriate utilization and lack of access into the MVPS to be worth pursuing further, two conditions should be satisfied. First, it must be possible to actually measure or quantify the extent of inappropriate utilization or lack of access. Second, it must make sense, in principle, to use the MVPS to correct such problems. Each of these issues is discussed separately below.

##### 4.1 Quantifying the Extent of Inappropriate Utilization and Lack of Access

###### Inappropriate Utilization

From the literature review on inappropriate utilization, we know that two methods have been used or are currently being used to determine what constitutes appropriate medical care. Both approaches, however, have significant shortcomings. Consensus panels involve a thorough review of past studies of efficacy, which have often been conducted on small, defined subsets of the population in controlled settings. The consensus process is a subjective one that may be influenced greatly by the individual physicians and other experts on the panel. Furthermore, the resulting clinical criteria may not take into account highly-individualized patient characteristics or preferences, and may become quickly outdated as new studies and evidence about efficacy become available. The process is also complex, costly,

and takes time to implement. Outcomes research, while more objective, is no less involved or time consuming. In addition, it requires good outcome data, particularly on morbidity, which are not always available and reliable. Thus, it is unlikely that either approach could ever be applied to the full range of Medicare physician services to establish clinical criteria for their appropriate use.

We have also learned from the literature review that quantifying the extent of inappropriate care depends on the availability of detailed information about the patient's medical condition. Claims data are generally insufficient and must be supplemented with information obtained from medical charts. Epidemiological data may provide interesting information on procedure rates relative to disease prevalence; however, in most cases, they are far too crude to derive reliable estimates of inappropriate utilization. Thus, chart review would be the most informative approach, yet it is tremendously expensive and time consuming. On the scale that would be required to estimate the extent of inappropriate utilization for the entire Medicare population, the financial and time requirements would undoubtedly be prohibitive. Also, the studies conducted to date have relied on medical chart data from inpatient hospital stays. Ambulatory care data would be much more difficult to obtain. In sum, it is currently not feasible to quantify the extent of inappropriate utilization for all procedures and for the full beneficiary population.

To date, appropriateness research has focused on the appropriate use of select procedures in certain geographic areas. These types of studies could be conducted for priority procedures. Priority procedures would include those that are high volume or high cost for the Medicare program, those with considerable uncertainty regarding appropriate use (possibly defined as those with high variation in use rates across

geographic areas), and those procedures associated with poor outcomes in a significant proportion of the cases where they are used. (See Phelps and Parente [1990] for an interesting empirical approach to setting priorities when selecting procedures for medical practice assessment.) Again, for most procedures there would first have to be a study to determine the appropriate indications for the procedure before the extent of inappropriate use could be estimated.

If the Secretary were to accept the results of studies on individual procedures, such as those conducted by Rand, it would be mechanically possible to incorporate evidence of inappropriate use into the MVPS recommendations. This task would be accomplished by calculating the expenditures associated with the inappropriate use. For example, Brook et al. (1986) found that 32 percent of a large sample of carotid endarterectomies performed in 1981 were inappropriate. If direct Medicare program expenditures for this procedure were, for instance, \$100 million, then the MVPS could be set to coincide with a reduction in future expenditures of \$32 million. The problem with this approach lies in trying to correct a specific problem with a global mechanism. As discussed further in Section 4.2, a change in the global MVPS would be spread across all procedures and would have a minimal, if any, effect on the specific problem it attempts to address.

#### Lack of Access

It appears relatively easy to measure potential access, but what is ultimately important is whether a person is actually able to enter the health care system when the need arises. As discussed in Section 3, utilization rates alone will not provide meaningful information on access to care. When observed at a point in time, there would have to exist some basis of comparison, such as expected "appropriate" use rates established with epidemiological data on the incidence and prevalence of

specific medical conditions. However, given the limitations of existing epidemiological data for most conditions, and other problems associated with establishing standards of care, this approach would not permit a systematic and exhaustive quantification of access limitations.

While it may be possible to establish the existence and extent of access problems for select procedures or select subsets of the beneficiary population, the most sensible approach, as discussed in our conclusions, involves monitoring utilization over time.

#### 4.2 Use of the MVPS as a Mechanism to Correct Problems with Inappropriate Utilization and Access

##### Inappropriate Utilization

Presumably, evidence of inappropriate utilization might be cause to set the MVPS lower than would otherwise be indicated by changes in prices and the size and composition of the Medicare population alone. This tactic would be adopted in the belief that a lower standard for the growth rate in physician expenditures would encourage physicians to monitor more closely the appropriateness of the care they deliver. However, while reducing the rate of aggregate expenditure growth in this way is expected to bring about reductions in utilization, there is little or no evidence that physicians collectively will change their behavior in response to the MVPS, nor that only inappropriate utilization will be eliminated. Such a diffuse, global approach is unlikely to resolve specific problems with inappropriate utilization.

More direct strategies (other than those involved with the MVPS) are called for in order to reduce inappropriate utilization. Practice guidelines are the obvious intervention,

but these are only now being developed for a small number of procedures and generally will not be disseminated on a widespread basis for some time. Also, it is not clear that guidelines are effective at reducing inappropriate care. While providing feedback to physicians practicing in high-use areas has brought their utilization rates closer to the mean, there is no guarantee (1) that the mean is the appropriate rate or (2) that only inappropriate procedures were eliminated. Without subsequent appropriateness studies, simply observing declines in the utilization rates will not reveal whether the proportion of inappropriate care has fallen (nor whether problems with access have arisen).

Another more direct approach, which could be used in tandem with practice guidelines, is the development of reimbursement standards that incorporate information on procedure effectiveness. Under this scenario, certain procedures thought to be subject to significant amounts of inappropriate use would be reimbursed only when the PRO or the fiscal intermediary (FI) determines that the procedure was performed for appropriate reasons (i.e., in keeping with the practice guidelines).

There is also the option of moving to less aggregate MVPSSs, either through the carve-out option for specific groups of physicians or through the establishment of subnational (e.g., state-level) standards. Either approach would foster a greater sense of collective responsibility and greater control over medical care expenditures. State-level standards have some theoretical appeal given states' historical role in health care regulation and the fact that Medicare's peer review programs are organized primarily by state. State-level performance standards could also serve as a mechanism to correct state inequities in medical care utilization (Rice and Bernstein, 1990).

### Lack of Access

Evidence of access limitations would presumably be a reason for the Secretary to recommend a higher MVPS than would be indicated by changes in prices and the Medicare population alone. This tactic would be adopted in the belief that a higher standard rate of growth for physician expenditures (and the "loosening of the Medicare purse strings" that this would signal) would lead to improved access to necessary services.

Depending on the underlying reason(s) for the limited access, however, this type of aggregate approach may not be sufficient to resolve the access problems. For example, if rural Medicare beneficiaries have fewer visits with specialists than appropriate because specialists are not located in rural areas, then setting a higher MVPS (and, by implication, a higher conversion factor for the national fee schedule) will likely do very little, if anything, to address the rural access problem. Direct approaches, such as providing incentives to specialists to locate in under served rural areas and to accept Medicare assignment, would be called for instead.

On the other hand, physician payment reform may reduce the access of Medicare beneficiaries as a group if, for example, Medicare fees fall substantially behind those of other payors and physicians reduce their Medicare practices. In this case, the decision to set a higher standard growth rate for Medicare physician expenditures is much more likely to improve beneficiary access as the higher MVPS works its way through the system, eventually resulting in a higher conversion factor and higher fees.



#### 4.3 Conclusions: Steps for the Future

The formidable difficulties involved with quantifying the extent of inappropriate utilization and lack of access to necessary services make the rigorous measurement and incorporation of these factors into the MVPS a task that goes well beyond our present capabilities, except, possibly, on a case-by-case basis for selected procedures. Additionally, the practical drawbacks of using the MVPS as a mechanism for addressing most utilization and access problems further reduces the utility of pursuing such an endeavor. Apart from the relatively mechanical task of accounting for the impact of changes in prices and the size and composition of the Medicare population, the decision of how much higher or lower to set the standard growth rate for physician expenditures will be influenced by normative judgments of what the appropriate growth rate should be, as well as by practical considerations of what the country can afford to pay. These normative decisions may be based on evidence of and perceptions about the extent of inappropriate utilization, lack of access, and (as discussed in the companion report to this paper) changes in technology, as well as on other factors not specified by the OBRA89 legislation.

Whatever the final determination is for the MVPSS each year, Congress is rightfully concerned about possible problems with access or inappropriate utilization as a result of the Medicare physician payment reform. Below we outline several approaches HCFA can use to monitor access and utilization problems.

##### Monitoring Utilization Rates

Utilization rates can be computed in a variety of ways; in general, this will involve the definition of the "service" of interest as well as of the "population" of interest. For instance, the service could be all Medicare covered physician

services, and the population could be all Medicare beneficiaries. The resulting ratio of services per beneficiary would provide a crude estimate of access. Narrowing the definition of the population to include only those beneficiaries who actually used a covered service during the time period would provide a rough measure of the intensity of utilization. Other population subgroups could be defined using characteristics of the population, such as race, age, socioeconomic status, geographic location, and combinations of these variables. Alternative definitions of services could be formed by considering type of service, place of service, specialty of provider, and combinations of these variables; individual procedures would also constitute a service.

The choice of which utilization rates to consider will be driven in large part by the policy issues one wishes to address, and may change over time. Availability of data will, of course, also be a determining factor. Currently available Medicare program files provide sufficient data to monitor utilization in a number of ways.

At a minimum, we can anticipate several utilization rates that will be important to monitor for policy purposes. First, physician payment reform may adversely affect the access of some vulnerable subgroups of the population. As discussed in Section 3.3, rural residents and blacks may have to pay more for their care because of increased copayments for services rendered in rural areas and for primary care, which blacks tend to receive more often than whites. This increased financial liability may impede access to care for these groups; thus, HCFA will probably want to monitor changes in their utilization over time.

Second, in light of the separate volume performance standards for the surgical and nonsurgical services, utilization rates should be monitored for each group of services separately.

If, in the future, additional MVPSS are established for smaller groups of physicians or for subnational areas, it will also be important to monitor the corresponding utilization rates. For example, if cardiologists are given their own separate MVPSS, then one might want to examine the proportion of enrollees receiving cardiology services or the number of cardiology services provided per beneficiary. Likewise, if state MVPSS are established, the utilization of services by enrollees in individual states would be of interest from a policy perspective.

Third, it will be important to monitor the utilization of procedures for which fees are substantially increased or decreased under physician payment reform. As discussed earlier, the fee changes could result in a number of different effects on the supply of and demand for these services.

When monitoring changes in utilization rates over time, it can be informative not only to examine absolute changes in a specific rates but also to consider how a given rate changed relative to other, comparison rates. A table such as the sample table presented below would permit both analyses. For instance, trends in the utilization rates of population subgroups before and after implementation of physician payment reform would indicate whether the fee schedule appeared to affect utilization. Because standards for what constitutes appropriate utilization are so difficult to determine, the comparison of relative changes in utilization rates between subgroups of the population will be important.

Example Table - Utilization of Physician Services per 100,000  
Beneficiaries, and Annual Percent Change by Beneficiary  
Characteristics: Pre and Post Medicare Fee Schedule.

<u>Pre Fee Schedule</u>			<u>Post Fee Schedule</u>			<u>Annual % Change</u>
1989	'90	'91	1992	'93	'94	89-91 92-94
Urban Bene.						
Rural Bene.						
White Bene.						
Black Bene.						

The utilization rates considered in this type of table could be defined for much more specific populations, such as Southern black rural individuals, and for much more specific services, such as individual procedures or groups of procedures.

In addition to monitoring changes over time, it may also be helpful to examine utilization rates for various groups of beneficiaries at a point in time--whether across geographic areas or across beneficiary characteristics such as race. Again, in the absence of an agreement on what the appropriate utilization rate should be, observing disparities in such utilization rates will not reveal whether there is too much or too little utilization. Cross-sectional variation in utilization could indicate lack of access for the lower-use groups as well as inappropriate overuse for the higher-use groups. Or, the underlying need for the service could vary for the groups, making it conceivable that each group is actually receiving the appropriate level of service even though the utilization rate is different for each group. There could even be some access problems within the high-use groups (e.g., lower access for inner city residents combined with high utilization for other residents of the metropolitan area) and inappropriate utilization (either under- or overuse) among subpopulations of the low-use groups. While monitoring across-group variation in use rates will not

reveal which of the above situations exists, it may nonetheless be quite helpful for determining which procedures appear to most warrant further investigation.

As an example of how this might be operationalized, HCFA could use Medicare Part B claims data (preferably from the Common Working File) to calculate age/sex-adjusted utilization rates for each individual procedure (HCPCS code) for selected geographic areas (e.g., divisions, states, urban v. rural areas, SMSAs, etc.) and subgroups of the population (e.g., blacks v. whites). For a given procedure, these utilization rates would then be compared across a type of geographic area (e.g., across all states) or population subgroups to determine the extent of use variation existing for that procedure. The ratio of the highest to lowest use rates could be computed to reveal the range of variation. In cases with more than two observations (e.g., use rates for 50 states as opposed to only a black utilization rate and a white utilization rate), the coefficient of variation (CV) could also be computed to provide more information on the actual distribution of utilization rates.

The results could be displayed in tables resembling the one below.

<u>HCPCS</u>	<u>Division</u>		<u>State</u>		.....	<u>White/Black</u>
	<u>Range</u>	<u>CV</u>	<u>Range</u>	<u>CV</u>		
11111	1.4:1	0.4	2.2:1	0.7		2.8:1
11112	2.5:1	0.6	2.7:1	1.2		3.4:1
.						
.						
99999	1.3:1	0.5	1.7:1	0.9		0.9:1

Algorithms could be developed to identify any procedure having a range or a CV above a prespecified threshold. The threshold itself is likely to vary by the geographic area or population group considered; for instance, a 3:1 range might be

considered indicative of a high degree of variation at the division level, while a 6:1 threshold could be more relevant for states. The high-variation procedures identified in this way would then be studied in more detail in an effort to understand the reason(s) behind the variation.

One drawback of this type of monitoring approach is that it will not identify procedures having high rates of inappropriate use or access limitations despite low rates of variation in use. For instance, whites and blacks could have very similar rates of use for a given procedure, yet both groups could have less-than-appropriate access to the procedure or across-the-board overuse of the procedure.

#### Monitoring Indicators of Potential Access

In addition to monitoring changes over time and cross-sectional variation in utilization rates, HCFA may want to follow a number of additional variables to track disparities and changes in potential access. One large group of variables that fall into this category are those factors that affect the beneficiary's financial liability, including: physician participation rates, claims and charge assignment rates, the reduction rate on unassigned claims, the prevalence of Medigap coverage, the Part B premium, the deductible, and the coinsurance percentage. The last three of these variables change only rarely and, thus, would not need to be monitored annually. On the other hand, participation, assignment, and reduction rates are available from existing Medicare program data and should be monitored annually. The best measure of beneficiary liability would be out-of-pocket costs arising from the deductible, coinsurance and balance-billing amounts. HCFA is now designing and testing the Current Beneficiary Survey (CBS). It is expected that the CBS will provide ongoing information about a variety of factors related to access to care, including use of services and out-of-pocket costs

for all health care services, whether or not they are covered by Medicare.

As was the case with utilization rates, variables such as participation and assignment rates can be examined in a number of ways, depending on the policy issues of relevance. Again, it is likely that examination of these variables by urban/rural and black/white status will be useful, as well as by other beneficiary characteristics, such as the beneficiary's annual health insurance expenditures. Type of service distinctions may also be helpful given the separate surgical and nonsurgical MVPSSs. Longitudinal analyses that consider both absolute and relative changes , and cross-sectional examinations could be informative.

Finally, there is a host of other variables that provide some indication of beneficiaries' potential access to physician services but that are not available from Medicare program data. These variables include health system characteristics, such as the physician-to-population ratio, linkages to a regular source of care, out-of-pocket expenditures for physician services relative to income, the fraction of ambulatory visits received in the emergency room setting, etc. Most of these variables would require special data collection efforts (e.g., a beneficiary survey); the CBS could serve as a vehicle for such efforts.

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